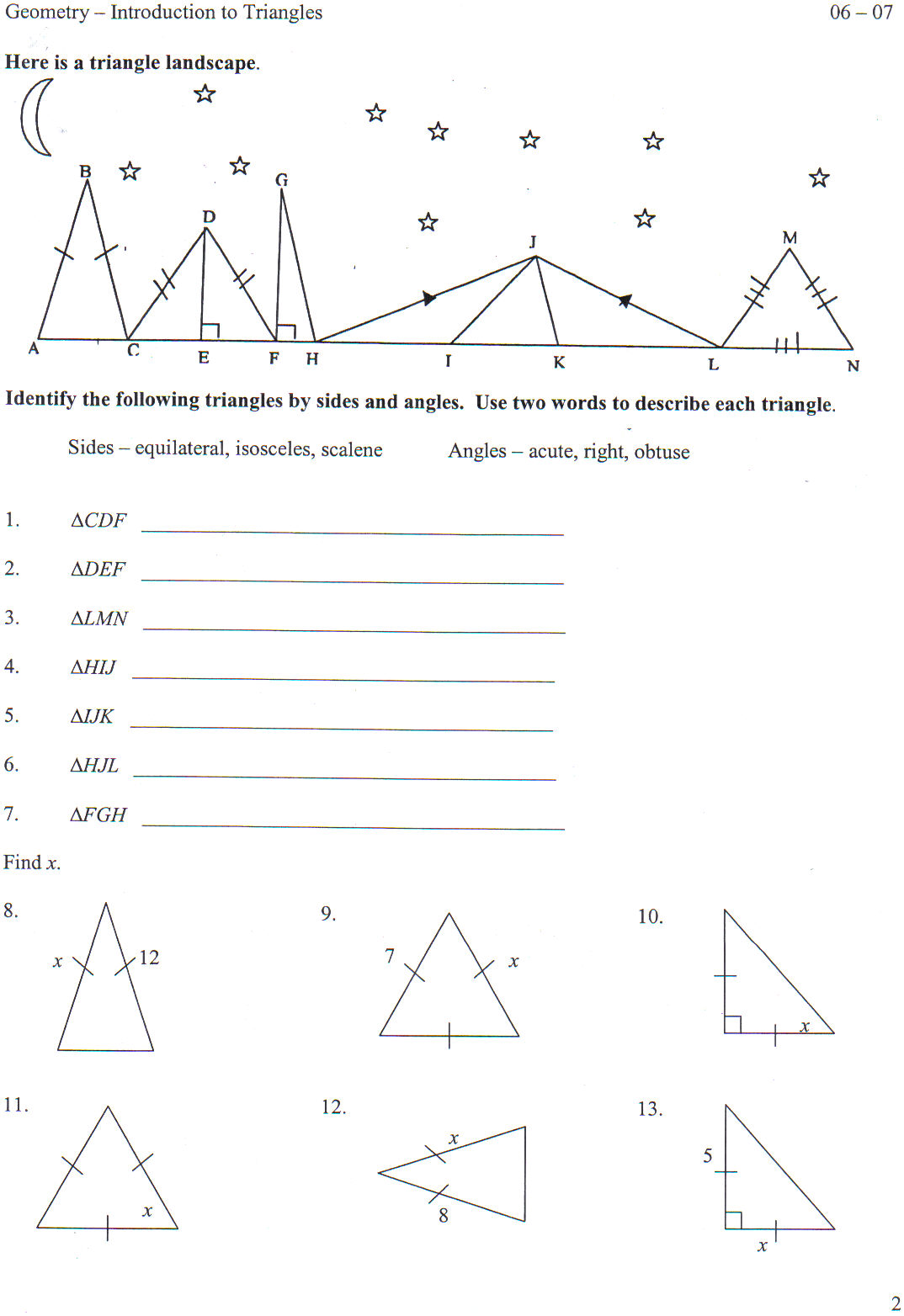
**Part 1**: Triangles in a Starry Night Sky

**Problems with Triangles** Name:

Many people don’t know that Vincent Van Gogh, the artist who painted Starry Night (and cut off his ear), ***also*** painted this gut-wrenching, tear-jerking triangle piece:



1. What type of triangle is? How do you know?

2. What about? What type of triangle must that be?

3. Which triangles are definitely isosceles? How can you tell?

4. andare both what type of triangle? How can you tell?

5. Name of all of the right triangles.

**Part 2**

Do 2 things for each of these triangles:

(a) State what type of triangle it must be and why, and then

(b) Figure out what x must be, and explain how you used the triangle classification to get it.

1. 2. 3.

*x*

7

*x*

12

*x*

**Part 3**

Use the information to figure out what type of triangle it could be (and then, of course, explain why). If more than one classification is possible, explain why.

1. sides of 9 in, 2 in, 8 in

2. angles of 

3. angles of 

4. sides of 5 mm, 6 mm, and 5 mm

5. angles of 

**Part 4:** Reading Those Triangles

Again: remember that we use tick marks represent congruent parts. So, any parts with 1 tick mark are congruent to each other. The same applies to 2 tick marks, 3 tick marks, etc. BUT, a part with 1 tick mark isn’t congruent to a part with 2 tick marks (or 3, or 4, etc.).

1. Use this diagram for these sets of questions:

a) If AB = 7, BC = 5, and CD = 6, find:

BD = \_\_\_\_\_\_\_ AD = \_\_\_\_\_\_\_

ED = \_\_\_\_\_\_\_ AE = \_\_\_\_\_\_\_

BE = \_\_\_\_\_\_\_

A

B

C

D

E

b) Use the notation for “congruent” to state which sides of these triangles are congruent.

2.

a) Name 1 equilateral triangle. Explain how you know.

b) Name 2 isosceles triangles. Again, explain how you know.

c) Name 1 scalene triangle. Again, explain how you know.

G

H

K

J

**Part 5**: Always, Sometimes, or Never True?

1. All equilateral triangles are isosceles.

2. Some scalene triangles are isosceles.

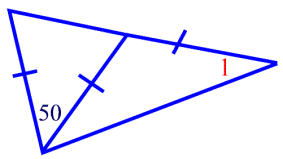
3. A right triangle could be isosceles.

4. Every equilateral triangle is an acute triangle.

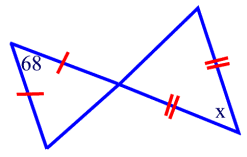
5. An obtuse triangle must have 2 acute angles.

6. Some isosceles triangles are acute.

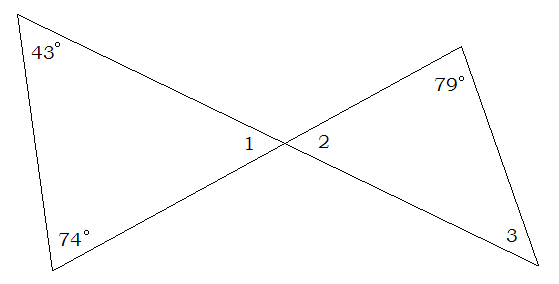
**Part 6**: Tri-Angular Enjoyment!

1. Find m∠1. Explain…  
       

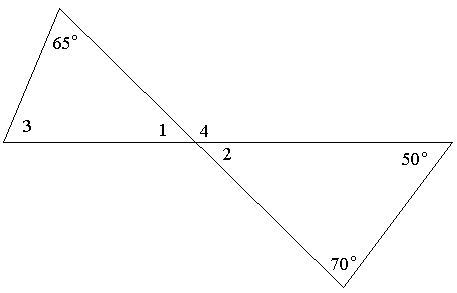
2. Find x. Explain…



3. Find m∠1, m∠2, and m∠3.



4. Find m∠1, m∠2, m∠3, and m∠4. Show your thinking…



5. Find x. Show your thinking…

a) b)

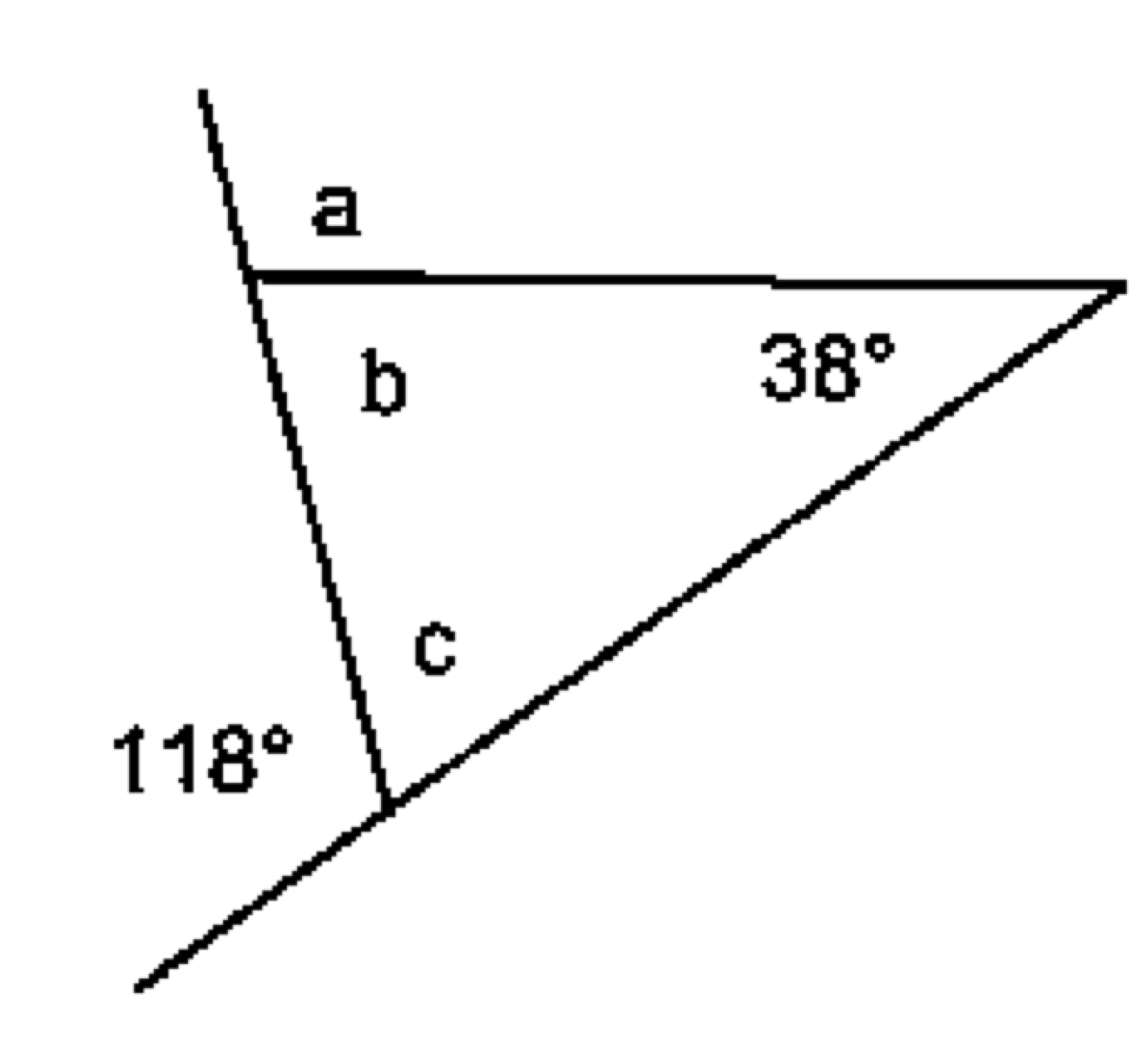
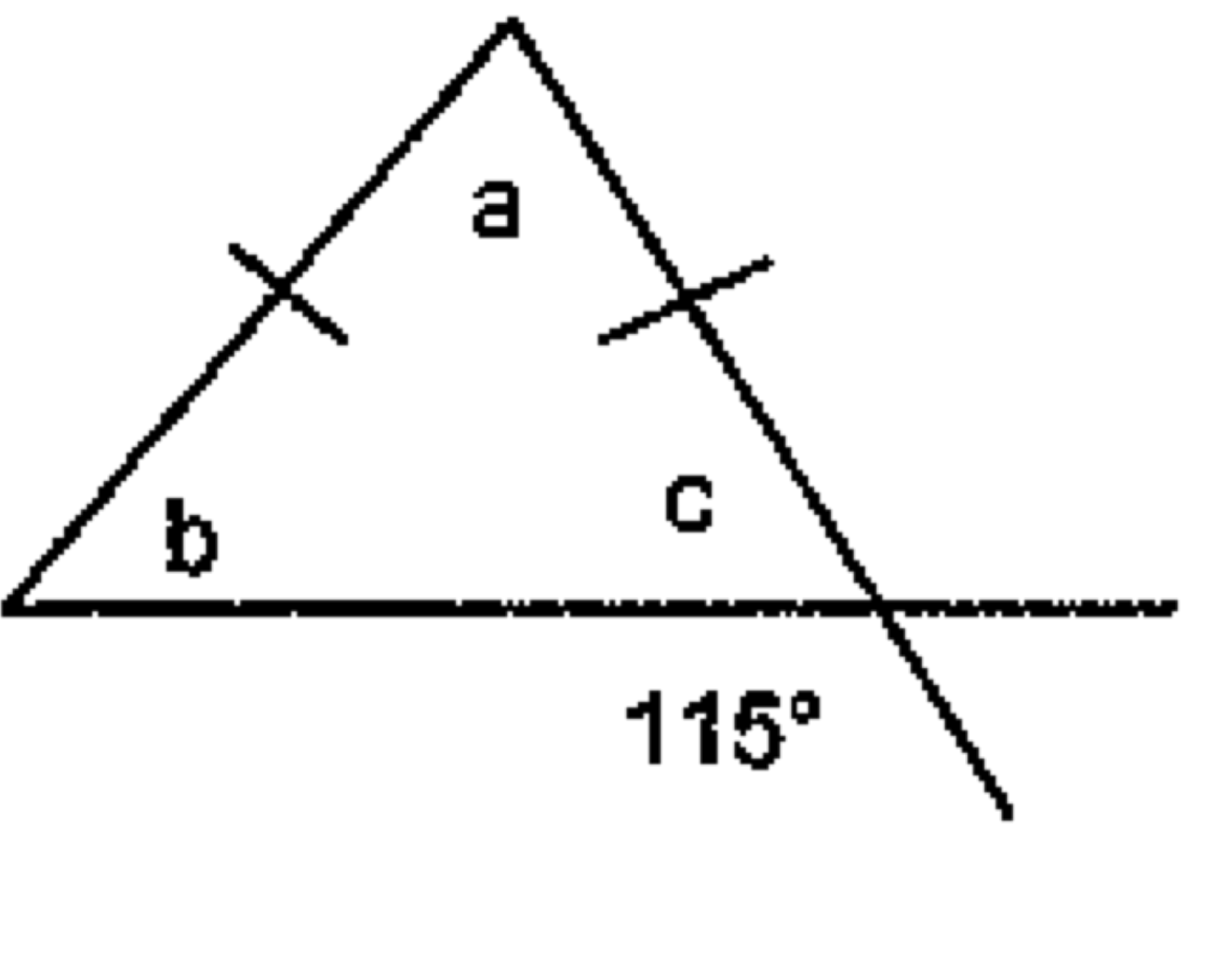
 

c) d)

6. Find a, b, and c. Show your thinking…

a) b)

7. Find x.

a) b)

**Part 7**: Triangles on the Plane

Do these on grids! (Except for #4—write the proof here.)

1. has vertices at A(-2, 4), B(-2, 8), and C(-5, 6). What type of triangle is ?

2. Suppose now that has vertices at A(-6, 2), B(-3, 6), and C(5, 0). What type of triangle

is ?

3. Determine whether a triangle that has its vertices at A(-2, -5), B(2,3), and C(4, -3) is a right

triangle.

4.

